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Appl. No. 10/677,015
Amdt. dated December 23, 2008
Reply to Office action of October 24, 2008

DEC 23 2008

Remarks/Arguments

Claims 16-17 and 19-30 stand rejected under 35 U.S.C. 103(a) as being obvious over Wingard in view of Seaman et al and Muniyappa et al. Reconsideration and withdrawal of the rejection is respectfully requested.

Claims 17, 26, 27, and 30 are canceled by this amendment.

Claims 16, 19-24, 28 and 29 are specifically directed to methods which require a first solvent extraction of up to 85% of the oil from soybeans and a thereafter extraction of substantially all of the oil remaining in the soybean meal through a second solvent extraction.

As solvent extraction has been historically performed, hexane is pumped through flaked soybeans until substantially all, i.e., about 99.5%, of the soybean oil has been extracted. In mechanical extraction, on the other hand, it is impossible to press out substantially all of the oil. Instead, about 25%, e.g., 15% to 40%, of the oil is left in the meal. As Wingard teaches, the oil remaining in the meal can be removed by the additional step of solvent extraction.

However, the two-step extraction used in mechanical/solvent extraction does not suggest that it would be obvious to use a two step solvent/solvent extraction. Specifically, when the oil is first removed by mechanical extraction, the only way to extract all of the oil is to use a second stage solvent extraction as noted by Wingard since substantially all of the oil cannot be removed by the mechanical extraction.

On the other hand, solvent extraction is perfectly capable of removing virtually all of the oil, i.e., 99.5% of the oil, in one extraction. Accordingly, the prior art has not had a reason to

divide the extraction into two stages.

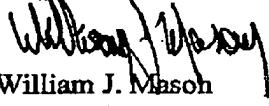
In accordance with the present invention, however, it has been found that two stage separation is advantageous since the first stage in which only part, i.e., less than 85%, of the oil is extracted produces a refineable, edible oil having an improved fry life, while the second solvent extraction produces an oil useful in such applications as biodiesel. There is no suggestion in Wingard of a two-stage solvent extraction of soybean oil, or of the advantages that flow from this two-stage solvent extraction.

Neither Seaman et al. nor Muniyappa et al. include any teaching relevant to two-stage solvent extraction. Seaman et al. is cited only as disclosing certain operating parameters for mechanical extraction, while Muniyappa et al. is cited only to show that soybean oil can be transesterified for use in biodiesel.

Claim 25 is not limited to solvent extraction as the first stage extraction. In claim 25, up to 85% of the oil is extracted from the soybeans, and substantially all of the oil remaining in the meal is removed by solvent extraction. However, Claim 25 contains the additional step of physically refining the first extracted soybean oil, which is not taught by either of the cited references. Instead, this step is only disclosed in the previously cited Tysinger patent, which was removed by the earlier filed Terminal disclaimer.

Accordingly, it is believed that this application is now in condition for allowance. Such action is respectfully solicited.

Respectfully submitted,


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